

(emphasis added). Support for the above features may be found throughout the original specification and claims. For example, specific support may be found in the original specification at least at page 2, line 21 through page 3, line 8 and at page 6, lines 4-27 and Figures 2-6. Itoh does not disclose, teach or suggest such features.

#### **A. The Itoh Reference**

As described in Itoh, at col. 3, lines 8-27 and Fig. 1, element 1 in Itoh is a controller, element 2 is a control valve and element 3 is a gas turbine engine. The controllable variable, in Itoh, is the number of revolutions ( $x$ ) produced by gas turbine engine 3 and the target number of revolutions is ( $x_s$ ). Controller 1 receives an error signal ( $x_s - x$ ) and generates an amplified error signal  $e$  that is passed to control valve 2. Control valve 2 receives the amplified error signal  $e$  and opens a valve to pass fuel at a fuel flow rate  $q$  to gas turbine engine 3. Gas turbine engine 3 receives fuel at fuel flow rate  $q$  and responds with a number of actual revolutions  $x$ . The number of actual revolutions  $x$  is then compared to the desired number of revolutions  $x_s$  to produce the error signal ( $x_s - x$ ).

#### **B. Itoh Does Not Teach a Controller as Recited in the Claims**

The Office Action asserts at page 3, lines 14-18 that "all anticipated components and limitations of claim 1 are present in Itoh. The controllers are operable to receive the error signal and gain signal to output a control signal. The controller via the controller receives the gain signal in dependence upon the error signal, in which the two signals (error and gain) are combined to represent the control signal (col. 3, lines 8-63)" (emphasis added). This is incorrect.

The Office Action asserts that elements 1, 2 and 3 of Itoh correspond to the claimed "controller." However, elements 1, 2 and 3 in Itoh cannot be combined to represent a controller that outputs a control signal as recited in claim 1 at least because element 2 outputs a flow of fuel, not a control signal, and element 3 outputs an actual number of revolutions, not

a control signal. The only controller described in Itoh is element 1, which receives a single input signal, error signal ( $x_s - x$ ). The controller 1 of Itoh receives **only** a single input signal ( $x_s - x$ ). Nowhere does Itoh teach or suggest a controller that is operable to receive an error signal **and** a gain signal, as recited in the claims.

Further, as stated in Itoh at col. 3, lines 28-30,  $G_1$ ,  $G_2$  and  $G_3$  represent separate **transfer functions** associated with the controller, the control valve and the gas turbine engine, respectively. A transfer function is defined as "the mathematical relationship between the output of a control system and its input" (McGraw-Hill Dictionary of Scientific and Technical Terms (Sixth Edition)). Hence,  $G_1$ ,  $G_2$  and  $G_3$  do not represent gain signals that can be passed to a controller, despite the assertion to the contrary by the Office Action at page 3, lines 7-9.

### **C. Itoh Does Not Teach a Gain Selection Means as Recited in the Claims**

The Office Action asserts, at page 3, lines 9-13, that Itoh teaches a gain selection means, as recited in the claims. This is incorrect.

In support of its assertion, the Office Action relies upon Itoh at col. 3, lines 28-64, which states in part that, "under a **final steady state condition** the gains represented by the transfer functions  $G_1$ ,  $G_2$  and  $G_3$  may be represented as  $K_1$ ,  $K_2$  and  $K_3$ ." However, as addressed above,  $G_1$ ,  $G_2$  and  $G_3$  represent mere transfer functions (i.e., a mathematical relationship between an input and an output). Itoh (e.g., at col. 3, lines 53-58) merely states that the transfer function, **as a whole**, may be characterized as a gain (i.e.,  $K_1$ ,  $K_2$ , and  $K_3$ ) once a steady state condition has been achieved. If controller 1 and/or flow valve 2 were interpreted as a gain selection means "operable to receive [an] error signal (e) and to output a gain signal (k) to [a] controller (4) in dependence upon the value of the error signal (e)," as recited in the claims, there would not be any elements remaining in Itoh that could be

interpreted as a controller "operable to receive the error signal (e) and a gain signal (k), and to output a control signal (c) in dependence upon the values thereof," as recited in the claims.

#### **D. Office Action Interpretation of Itoh is an Improper Use of Hindsight**

As addressed above, the controller in Itoh receives only a single input signal (i.e., error signal ( $x_s - x$ )). Nowhere in Itoh are the internal functions of controller 1, or its associated transfer function  $G_1$ , described. There is no basis to assume that controller 1 internally generates, and internally receives, a gain signal dependent upon the error signal ( $x_s - x$ ). Although there is no teaching or suggestion within the Itoh reference of internal divisions, internal processing or internal signal passing, the Office Action assumes internal modules within controller 1, assumes processing performed by the assumed modules, assumes signal exchanges between internal modules and then asserts that a controller with these various (improperly) assumed structures and operations is "operable to receive the error signal (e) and a gain signal (k)," as recited in the claims. Such assumptions are an improper use of hindsight, and are not supported by evidence.

#### **E. Summary**

Applicant respectfully submits that any combination of transfer functions  $G_1$ ,  $G_2$  and  $G_2$  used to support an assertion that Itoh teaches or suggests a "controller" or a "gain selection means," as recited in claim 1, would suffer from the same deficiencies addressed above.

Accordingly, it is respectfully submitted that independent claim 1 is patentably distinguishable over the applied art. Claim 7 includes a feature similar to that addressed above with respect to claim 1. Therefore, claim 7 is patentably distinguishable over the applied art for at least the same reasons presented above. Claims 2-3, 5, 7-9, 11 and 13-16 depend collectively from independent claims 1 and 7 and are likewise patentably distinguishable over the applied art for at least their dependence on allowable base claims, as well as for additional features they recite.

For example, claim 5 recites that "a disturbance compensation means (10, 12) is provided which is operable to receive an input value relating to at least one other parameter value of the controlled apparatus, and to receive the error signal, and to produce a compensated error signal in dependence upon the input value and the error signal, and to supply the compensated error signal to the filter means or the gain selection means (6) in place of the error signal." Claim 11 recites a similar feature.

Itoh does not disclose a disturbance compensation means as defined in claim 5 or claim 11. Itoh makes absolutely no reference to producing an error signal dependent upon "at least one other parameter value" (i.e., more than the one measured operating parameter) since Itoh only measures one variable (see Itoh at col. 3, lines 20-21) and hence uses only that one variable to produce an error signal. Additionally, the resultant error value of Itoh is not altered in response to its own value, as recited in claim 5 or claim 11 (i.e., to produce a compensated error signal in dependence upon the input value and the error signal) but only in response to the actual value of the control variable.

Accordingly, withdrawal of this rejection is respectfully requested.

## **II. §103 Rejection of Claims 4 and 10**

The Office Action rejects claims 4 and 10 under 35 U.S.C. §103(a) as unpatentable over Itoh in view of U.K. Patent 1,135,508, referred to in the Office Action as "IBM." This rejection is respectfully traversed.

Claims 4 and 10 depend from claims 1 and 7, respectively. IBM fails to overcome the above-described deficiency of Itoh with respect to claims 1 and 7. Therefore, the asserted combination of Itoh and IBM does not teach or suggest the combinations of features recited in claims 1 and 7.

For at least these reasons, it is respectfully submitted that independent claims 4 and 10 are patentably distinguishable over the applied art for at least the reasons discussed above, as well as for additional features claims 4 and 10 recite. Withdrawal of the rejection is respectfully requested.

**III. §103 Rejection of Claims 6 and 12**

The Office Action rejects claims 6 and 12 under 35 U.S.C. §103(a) as unpatentable over Itoh in view of U.S. Patent 4,439,868 to Brown ("Brown"). This rejection is respectfully traversed.

Claims 6 and 12 depend from claims 1 and 7, respectively. Brown fails to overcome the above-described deficiency of Itoh with respect to claims 1 and 7. Therefore, the asserted combination of Itoh and Brown does not teach or suggest the combinations of features recited in claims 1 and 7.

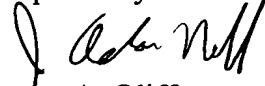
For at least these reasons, it is respectfully submitted that independent claims 6 and 12 are patentably distinguishable over the applied art for at least the reasons discussed above, as well as for additional features claims 6 and 12 recite. Withdrawal of the rejection is respectfully requested.

**IV. Conclusion**

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-16 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



James A. Oliff  
Registration No. 27,075

J. Adam Neff  
Registration No. 41,218

JAO:JMH

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**OLIFF & BERRIDGE, PLC**  
**P.O. Box 19928**  
**Alexandria, Virginia 22320**  
**Telephone: (703) 836-6400**

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